The Mérode Cup - Plique-à-Jour Enamel

Atlantia's 12th Night - Edgar Refskegg

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Contents

Overview

The procedure for creating this plique-à-jour piece that I present is multi-tiered with several distinct steps. This document will separate them out into easy to digest steps. The intent here is to provide a general overview of both the period method of preparing metal and subsequent enameling, the modern steps, and an explanation on why the differences exist. Additionally, I intend to add other information as necessary to provide amplifying information and otherwise.

Benvenuto Cellini's book Treatises of Benvenuto Cellini on Gold-smithing, written in 1568 is a significant resource used when trying to understand how medieval plique-à-jour was created.[1] In it he describes the method for creating a plique-à-jour enameled bowl, which was in the possession of King Francis in the year 1541. The Mérode Cup was likely created in a very similar way.

For greater amplification of the steps, differences, or historical background, either look for other documentation I've written or simply ask me! I enjoy helping others learn and typically it's much easier to convey the nuances of enameling through a conversation. Reach me at edgar@refskeggbrewing.com

Relevance to Tempore Atlantia 1350-1500 CE Competition

The plique-à-jour piece here is an attempt at reproducing the style of enameling from the Mérode Cup, which is a goldsmithed cup from 1400. Since this style of enameling was difficult, delicate, and rare even in period, very few examples of it remain. It can be seen in Figure 1 of the accompanying photo document. However, despite the rarity, the Mérode cup remains and is one of the best quality and oldest examples of plique-á-jour enameling. The cup is of beautiful craftsmanship

In this instance, the window portion of the cup itself is what is under examination. The enameling done on the cup was shaped using cloisonné wires placed into the cut out frame of the cup.

What is Plique-à-Jour?

Plique-à-jour is French for "letting in daylight," and is a challenging enameling technique that is difficult and prone to failure. It is similar to cloisonné or champlevé where enamel is applied into open cells. However, in this style, the backing is ultimately removed and therefore allows light to come through transparent enamels. The technique is similar to stained glass but is done in a much smaller area. To achieve this, the enameling is done with a temporary backing that is removed upon finishing the work. In period, this was done using an iron template shape, like a bowl[2] (I've also heard of clay being used) that is painted with an adhesive upon which the wires are shaped and glued. When the enameling is done, the template shape is removed. This is called, modernly, the filigree method. The style I used for this plique-à-jour, by contrast, is called pierced plique-à-jour, where metal is cut away. See Figures 2 through 4 in the accompanying photo document.

Medieval Method

The process by which medieval artisans created plique-á-jour enameling is described in only a few primary sources, but most notably by Benvenuto Cellini as mentioned above.[3] In his chapter on Filigree work Cellini describes the plique-á-jour process.

[1] B. Cellini, *The Treatises of Benvenuto Cellini on Goldsmithing and Sculpture*, Dover Books on Art History, Surveys, Aesthetics, Classics (Dover Publications, 1967), https://books.google.com/books?id=CGBQAAAAMAAJ.

[2] Ibid.

[3] Chapter 2, On Filigree Work is where Cellini describes the process.

Gilding in this time period was done using the fire gilding method. The gold or silver was dissolved in mercury to create an amalgamation with consistency similar to butter. This amalgamation was rubbed onto the metal and then heated in a furnace, which boiled off the mercury, leaving the precious metal behind. Mercury vapor is incredibly hazardous.

Step by step - generalized (medieval)

1. Create iron template shape and apply adhesive
2. Obtain flat wires (cloisonné) and form onto shape
3. Solder wires together
4. Prepare enamel for packing
    - This was done using lump enamel (large chunks of glass) that was ground in a pestle and mortar to the appropriate grain size.
5. Moisten enamel and pack into the empty areas.
6. When sufficiently packed, fire enamel in furnace
7. After cooling, re-pack and re-fire enamel as necessary to completely fill the metal
8. For plique-á-jour enameling, this process would be repeated many times (15-20 usually) because the glass fusing contracts substantially.
9. Polish metal
10. Finished!

Modern (My) Method

The process I used was largely similar to the medieval method except for a few key differences which mainly involves the use of a few electronic, and chemical procedures. The core process is effectively similar, though overall requires more steps to ensure the best work.

The art is done electronically (Illustrator, usually) and then printed onto regular printer paper to be glued onto the metal for cutting (Figures 2-4 in photo document).

For enamel packing, I do not use a quill, but instead use fine paintbrushes, dowel rods with darning needles (fulfills similar purpose as quill) embedded, and long fine pointed metal tools. 150 and 220 grit alundum stones are used for the initial grinding to smooth down all of the glass to be level with the metal. 400+ grit sandpaper (I go up to 1000, but more is certainly fine) is used to do the final polishing steps.

Also, I do not gild (fire gilding, very hazardous). Fire gilding is not a safe process and should be avoided. At some point I'm going to consider building my own electroplating set or most economical would be to find a local electroplating shop that can gild copper.

Step by step - generalized (modern)

1. Determine art desired and draw electronically. Print onto printer paper
2. Glue design onto metal
3. Cut metal out and drill holes for pierce work
4. Thread saw blade through holes and remove negative space.
5. Create temporary backing for the plique-á-jour piece. I used thin copper foil.
6. Pack copper with wet enamel
7. Dry the enamel (I do it on top of the kiln) and then fire for a few minutes. The drier the better, especially for PaJ.
8. Re-pack and re-fire as necessary. PaJ requires more time through the kiln to get it right.
9. Polish

10. If gilding... electroplate it now (or do fire gilding, if you hate your health and the law).
11. Finished!

Explanation of Differences

Cloisonnè vs. Pierce Work

This is the most major difference between the plique-á-jour work on the cup and my own creation. The work done on the Mérode Cup was performed using cloisonnè wires, whereas mine was done using pierce work, as seen in the accompanying picture document (Figures 1-4).

Plique-à-Jour Medieval vs My method

Cellini describes plique-à-jour in his book on Goldsmithing and Sculptures[4]

Electric Kiln vs. Charcoal Furnace

Simply, the electric kiln is much more portable and has a far superior temperature control than a charcoal furnace. The charcoal furnace is not portable, requires substantial maintenance, and again is simply not practical for the goals I have.

Polishing and Gilding

Interestingly, the grinding and polishing process that I use is very similar to medieval smiths as far as the general process is concerned. I can use consistent and standardized stones and sandpaper, both wet and dry. I also finish mine with spray polyurethane to resist tarnishing (because mine usually aren't gilded!). By contrast, Theophilus[5] uses the following: sandstone, a smooth hone, potsherd from ancient pots, flat smooth lead plate, goatskin fastened to a wooden board. All of his are done wet and dry in various combinations.

Miscellaneous

A lot of the tools I use are likewise different than what is described in period manuals and artwork. However, unless otherwise described they are functionally similar. Something to note is that in medieval workshops these tasks all would be divided amongst a team of metal workers. By contrast, the work is done mostly by me and occasionally a few helpers (especially for the art). We're able to accomplish a lot with only a few people with the methods we use to enamel.

Also, the enamel powder we use is likely more consistent as well, and possibly uses different additives to create the various colors. I typically use 80 mesh enamel and don't have to worry about sifting any myself. Medieval enameling was done, as mentioned above, using lump enamel. This has to be broken up and sifted to the proper size. However, it is generally still placed using wet inlay.

[4]Cellini, chapter 2, pg 13. He talks about how a king asked him how his (the king's) filigree bowl was made and Cellini describes the medieval plique-à-jour process.

[5]Theophilus, book III chapter 55, pg. 128

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